

Building a Strong BASE of Support for All Students Through Coplanning

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It is Friday afternoon, at last. It has been a long week, meeting the demands of students, parents, other teachers, and administrators. Your to-do list seems to stretch on to eternity. Next on the list is your team planning time. You have only an hour and a half to plan the next unit, and you're feeling pretty uninspired. Sound familiar? Keep reading to learn about a coplanning routine that can help your team use your valuable time efficiently.

In the search for better ways to teach in inclusive classrooms, both special and general education teachers grasp at any common planning time they can. In addition, they are always looking for efficient ways to use that time.

This article presents a unit-planning process and recordkeeping form that teachers have used successfully with ninth-grade nontracked math classes.

Building consensus about what is most important fosters useful discussions about priorities, the goals of the class, and what students need in their futures.

BASE is an acronym for the process of identifying the **B**ig ideas, **A**nalyzing areas of difficulty, creating **S**trategies and supports, and **E**valuating the process. Using BASE, we have created strategies and structures to help secondary students with disabilities and students who are at risk to be successful in a "reform" math curriculum. (For further information on reform math, see Davis and Maher, 1996; Hofmeister, 1993, and the invited response articles: Kameenui, Chard, & Carnine, 1996; and Montague, 1996.)

How Did We Develop BASE?

A team of four teachers developed the BASE process at a small, urban, nursery/kindergarten–12th grade school of about 600 students. The four teachers on the BASE planning team included the three ninth-grade math instructors and the sixth-ninth-grade resource instructor. The resource teacher had cotaught with one of the math teachers the previous year; and although both agreed that coteaching had many advantages, both also wanted a more systematic, time-efficient routine to keep planning focused on the most critical tasks, rather than getting sidetracked by minutia or tangents. The addition of two new math instructors who were interested in teaming brought the advantage of additional people power, but also the complexity of matching four schedules and four teaching styles rather than just

two. Other planning processes we looked at were simply too long and detailed for this team to accomplish in the time that was available. We wanted to use our planning time for essential tasks only.

From this starting point, the team developed the BASE process to help our team plan general education units. The usual time needed for this team to use the entire BASE process was 60–90 minutes of team planning time, with each team member individually spending 45–60 minutes on delegated tasks for each 3–4 week unit, in addition to other kinds of planning (e.g., daily lessons, grading). The BASE process can be used in conjunction with coteaching or on its own. BASE is a supplement to, not a replacement for, other kinds of important consultation and coteaching routines (e.g., problem-solving and building and nurturing collegial relationships). This team used the BASE process to plan units for three sections of a nontracked ninth-grade Integrated Math class. Although the team found that the BASE process took about the same amount of time as the less-structured unit planning the previous year, the payoff in terms of supports for students was much greater and saved the team planning time in the long run.

Big Idea Analysis

To concentrate teaching efforts on the most important concepts, the team must

BASE: Identifying the Big ideas, Analyzing areas of difficulty, creating Strategies and supports, and Evaluating the process.

define the big ideas of the unit (Burke, Hagan, & Grossen, 1998). Carnine, Dixon, and Silbert (1998, p. 95), defined "big ideas" as those that "represent major organizing principles, have rich explanatory and predictive power, help frame significant questions, and are applicable in many situations and contexts." Defining the big ideas as a team has several advantages. Building consensus about what is most important fosters useful discussions about priorities, the goals of the class, and what students need in their futures. Defining the big ideas can also help the nonmath special education teacher (who might not be present in the classroom itself) to understand the material better.

The team finds that visualizing the planning pyramid is especially useful. In Figure 1, the pyramid places the things we want every student to learn at the base, what we want most students to learn in the middle, and what we want some of our students to learn at the top. The pyramid helps the team to understand that while there are many concepts and skills that are taught in a unit, only a limited number are so important that we expect every student to master them (Schumm, Vaughn, & Harris, 1997). In the sample BASE planning tool (see Figure 2), the big ideas for Unit 1 are defined. For this team, reaching consensus on the big ideas takes the largest chunk of our planning time, usually at least 30 minutes.

Analyzing for Difficulties

Once the team defines the big ideas, we ask which of these ideas will be most difficult for our students to learn. The team thinks about what was difficult for students in previous years, analyzes the abstractness and complexity of the concepts, and thinks about the specific



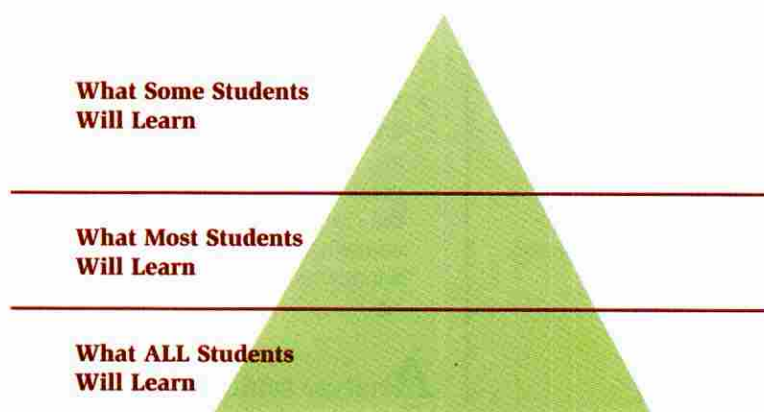
Teachers grasp at any common planning time they can—and look for efficient ways to use that time.

learning difficulties of our students with special needs. The team considers the difficulty of applying the concepts, as well as the skills needed to do so, including using technology.

When there is overlap between big ideas and areas of difficulty, the team can easily identify teaching challenges. Thus, the team knows where to focus strategies and other supports. In the

sample BASE planning tool (Figure 2), the team identifies four areas of difficulty for Unit 1. Three of the areas (creating and interpreting box plots using the 5-number summary; computing, describing data; and interpreting the mean absolute deviation) are specific mathematics concepts. The other area is a non-math-specific skill needed for success with the math curriculum (e.g.,

Figure 1. The Planning Pyramid



Source: Schumm, Vaughn, & Harris, 1997

Finding strategies and supports is the most critical stage of the BASE planning process.

how to use technology such as a graphing calculator, how to work in a group, etc.). For this team, identifying areas of possible difficulty usually takes 10-15 minutes.

Strategies and Supports

The team's next step is to think about how to develop strategies and supports to help *all* students with the identified areas of difficulty. The BASE planning tool includes a list of strategies that will help the team to teach the concept better (Learning Strategies), as well as options for different ways students might demonstrate that they understand the concepts (Assessment Strategies).

Our team finds it helpful to have the prompt of a list of strategies on the template, although our list continues to evolve. Our team strongly encourages other teams to use a list, even if it is not

the particular list on this BASE template. The BASE list of learning strategies includes several forms of mnemonics (Scruggs & Mastropieri, 1990) including acronyms, keyword pictures, and rhymes, as well as methods that use different learning styles (movement, drama, manipulatives) and shaping tools, such as scaffolding and extra prompts. Our team usually spends 10-15 minutes deciding which strategy type might best teach each area of difficulty, then assigns members the task of creating strategies on their own. The individual members later share the strategy they developed with the group, and

Figure 2. A Completed BASE Planning Form for Unit One a Ninth-Grade Math Unit

<p>Representing data visually helps you to interpret the data and see the patterns</p> <ul style="list-style-type: none"> • Stem and Leaf Plots • Number of Line Plots • Histograms • Scatter Plots • Box Plots <p>In order to interpret the data, you should systematically consider certain concepts</p> <ul style="list-style-type: none"> • Outliers in the data • Symmetric or skewed data • Clustering in the data • Range of the data • The center of the data (mean, median, mode) • The distribution of the data (5-Number Summary, Mean Absolute Deviation) <p>Technology can help you to create displays of and analyze data more easily</p> <ul style="list-style-type: none"> • Using TI-83 to make graphs, compute the center and distribution of the data <p>Big Ideas</p>	<ul style="list-style-type: none"> • Box Plot/5-Number Summary—this is a graph they probably have not seen or used before, so “reading” what it tells you and interpreting the data displayed this way is hard. • Describing/interpreting data—students understand the concepts needed to describe and interpret the data, but often apply just one or two instead of all of them when using a particular data set. • Mean Absolute Deviation (MAD)—is a concept they have not learned or used before and is pretty abstract. • Setting the viewing window—students quickly learn how to enter data and create the graphs, but adjusting the viewing window is complicated. <p>Analyze Difficulty</p>	<p>Learning Strategies</p> <ul style="list-style-type: none"> • Acronym • Rhyme/Song • Movement • Storytelling/Drama • Keyword Picture • Alternative Algorithm • Scaffolding • Extra Prompt • Manipulatives • Analogy <p>Assessment Strategies</p> <ul style="list-style-type: none"> • Accommodated assignments • Accommodated test • Alternative to test <p>Strategies and Supports</p>	<p>Big Ideas Evaluation</p> <ul style="list-style-type: none"> • MAD is not a big idea. Interquartile Range is a more widely used (and easier to understand) measure of distribution. <p>Areas of Difficulty Evaluation</p> <ul style="list-style-type: none"> • Concept of variability of data was more difficult than expected. • Choosing appropriate graph for particular data set was more difficult than expected. • Some test questions difficult because of vague wording. • Concept that scatter plot shows relationship between two variables was difficult. <p>Strategies Evaluation</p> <ul style="list-style-type: none"> • Strategies we had were good—were easy to use and helped students. • Add matching game with data sets and graph types? <p>Evaluation</p>
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each teacher uses the strategy in his or her own class.

Figures 3-5 show some of the strategies for Unit 1. The strategies include an acronym to help students remember what concepts to address as they describe a data set (Figure 3), a keyword picture to help students remember what the Mean Absolute Deviation (MAD) measures (Figure 4), and a movement activity to help students understand what a box plot tells them about the distribution of data (Figure 5).

In addition to the learning strategies, the team also considers assessment strategies or options. Because the team's classes are nontracked and include all ninth graders, the team creates several levels of assignments that relate to the planning pyramid (see Figure 1). The enriched assignment includes problems that assume the student has learned what was taught in class and asks them to take the information to the next level or requires a deeper understanding of the concept. The standard assignment includes the problems that ask the student to apply and practice the concept taught in class. The accommodated assignments for students with special needs may be shortened to include only questions that relate to the big ideas, or may be scaffolded, with more prompts, such as filling in the blanks in an equation rather than finding and writing out the whole equation. Defining exactly which problems and prompts will be in each level of assignment is one of the tasks that

Figure 3. An Example of an Acronym Developed to Teach a Difficult "Big Idea"

SCRAP the Gap between your score and the score you want!
Remember to discuss the following when describing the distribution of data from a graph:

Symmetric or skewed?

Clustered?

Range

Any Outliers?

Peak

Gaps?

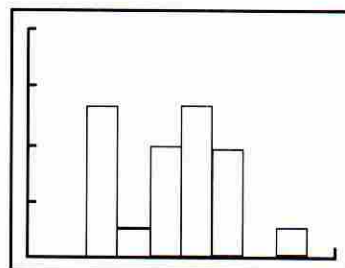


Figure 4. An Example of a Keyword Picture Developed to Teach a Difficult "Big Idea"

MAD (Mean Absolute Deviation)

- The average of the distance between the mean of the data set and each data point.
- MAD is a measure of range and clustering. The bigger the MAD, the more spread out the data is.

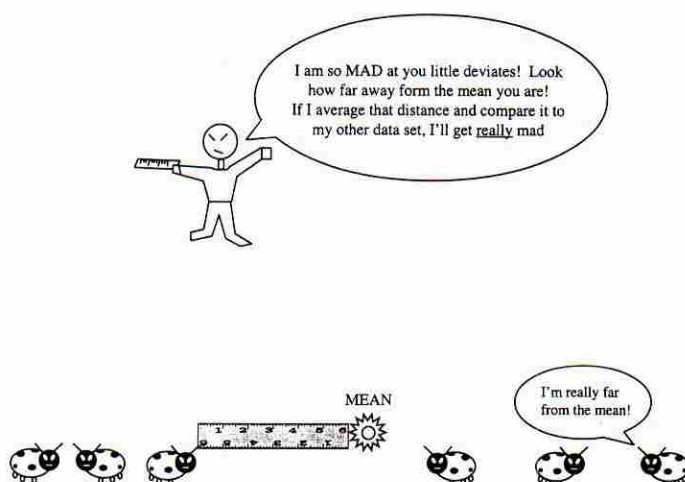


Figure 5. An Example of a Movement Activity Developed to Teach a Difficult "Big Idea"

The Five-Number Summary and Box Plots: A Movement and Illustration Lesson

Objective

- To actively involve students in illustrating/demonstrating the five-number summary and box plot.
- To help students to recognize how to interpret a box plot.

Materials

- Index cards, tape, markers.
 - A number line from 0 to 10 drawn on chalkboard at front and back of room.
 - Yarn/string
 - 10 cereal boxes, flattened or cut apart, taped end to end.
 - A "median marker"—ruler? umbrella? magic wand? whatever.
1. Divide students into two groups.
 2. Tell each student to think of a number between 1 and 10, but the numbers for the group as a whole must follow the rules (Group A: 1. All numbers must be clustered within a band of four numbers. 2. At least six people in the group must share the same number. Group B: 1. No more than two people can share any number, and 2. There must be two gaps.)
 3. Each student tapes an index card with his or her number written on it to his or her chest and writes the entire data set on the board.
 4. Each group finds the five-number summary for their data set and writes it on the board.
 5. Each student finds his or her place on the number line and stands in front of that spot on the board.
 6. The group illustrates the box plot by wrapping the cereal boxes around the students in the Q1 and Q3 range, having a student at the median hold the magic wand, and stretching the string out to the minimum and maximum point students.
 7. Discuss the interpretation of the box plot and compare box plots.



The Five-Number Summary Activity is shown as discussed in Figure 5.

the team assigns to several of our members to complete individually.

Finding strategies and supports is the most critical stage of the BASE planning process—from a special education perspective—because it is where the team is developing and applying research-

based strategies for reaching all students and adjusting the assessments for different ability levels. When the team wasn't using the formal BASE process in previous years, we developed fewer specific strategies to teach difficult concepts, and we had fewer and less differ-

What Does the Literature Say About Coplanning?

Coteaching arrangements between special education teachers and general education teachers have become a widely practiced method for inclusion of students with disabilities (Friend & Cook, 1998). While coteaching can be an extremely effective way to serve students with disabilities, there are barriers that may inhibit success (Bauwens & Hourcade, 1995). Barriers that are often identified by teachers and practitioners are issues related to planning time (Karge, McClure, & Patton, 1995).

Because time will always be limited, and because good planning is imperative for successful outcomes, coteachers must develop effective and efficient planning processes and structures that ensure that students' needs are addressed and the teachers' goals are achieved (Gable, Hendrickson, Evans, Frye, & Bryant, 1993; Walther-Thomas, Bryant, & Land, 1996).

entiated assignments and assessments. From a general education perspective, the BASE process helps validate the unit objectives, it helps support the teacher in meeting a broad range of student needs in one classroom, and it expands the teacher's repertoire of strategies.

Evaluation

At the end of the unit, once the team assesses students' learning, we evaluate our planning and our teaching. The team asks if the big ideas were identified accurately. Sometimes as the team is teaching the unit, our perspectives on what is important and what isn't will change, and it is important for the team to keep records on this change for subsequent years. For example, in the case of Unit 1, the team came to the consensus that the mean absolute deviation (MAD) was not a concept that is widely used at the college level or elsewhere,

Figure 6. A BASE Planning Template

<p>Big Ideas</p>	<p>Analyze Difficulty</p> <p>Strategies and Supports</p> <p><i>Learning Strategies</i></p> <ul style="list-style-type: none"> • Acronym • Rhyme/Song • Movement • Storytelling/ Drama • Keyword Picture • Alternative Algorithm • Scaffolding • Extra Prompt • Manipulatives • Analogy • _____ • _____ <p><i>Assessment Strategies</i></p> <ul style="list-style-type: none"> • Accommodated assignments • Accommodated test • Alternative to test 	<p><i>Big Ideas Evaluation</i></p> <p><i>Areas of Difficulty Evaluation</i></p> <p><i>Strategies Evaluation</i></p> <p>Evaluation</p>
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and that a simpler and more often used way to measure distribution is inter-quartile range.

Next, the team asks themselves if the areas of difficulty were predicted accurately. Our team has found that each group of students can have new difficulties, and that when we create strategies to teach some concepts, others then become the difficult areas. With reflective evaluation, we can thus target these concepts for the next time the unit is taught.

The team then evaluates the strategies and supports to see if they were successful for the students and reasonable for the teacher to implement. In the case of Unit 1, the team observed that

students demonstrated improvement in understanding the targeted concepts compared to students the year before, especially with the skill of describing the distribution of data. Students report-

BASE includes strategies that will help the team teach the concept better (Learning Strategies) and different ways for students to show that they understand the concepts (Assessment Strategies).

Tips for Using BASE Effectively

- Meet at a regular time, always at least a week before the unit begins (sooner is better).
- Come to the meeting with a list of big ideas and areas of difficulty. The team won't always agree at the beginning, but this way there is a thoughtful starting point.
- Have a definition of "big ideas" at hand, and use a set of questions to help guide thinking (e.g., Will they need to know this for college? Will they need to know this for most jobs?) in case of disagreements.
- Talk about what *type* of strategy is best suited to teach an area of difficulty, but once the type is decided, divide the actual creation of strategies among team members, as "homework," according to their skills and talents. For example, once the team has decided that an "acronym" would be a good strategy, don't try to create it on the spot—assign it to the person who is best at creating acronyms.
- Divide work as equally as possible, but also according to skill and talent.
- Never skip the evaluation step. It's tempting to skip it and move on to the next unit, but evaluation is critical for long-term effectiveness.
- Assign one member the role of recordkeeper, and have that person distribute a final draft of the BASE and the strategies developed at the end of each unit so all team members have it in their files.

ed that they enjoyed learning the strategies, and the use of specific strategies was often apparent in their work (e.g., most students described data sets using the concepts in the order they appeared in the acronym; see Figure 3).

The evaluation phase of the BASE process has helped the team to be more reflective practitioners, has provided a head start on adjusting lessons for next year, and has given our team a structured way to celebrate our successes, which is important for team morale.

Final Thoughts

The BASE planning process did not necessarily save our team time in the short run, but defining the big ideas and creating strategies and supports is already saving the team time this year because they are ready to use without much additional planning. When we meet to plan the same or similar unit, we certainly adjust our BASE, but we are not starting from scratch. The BASE records are also helping us quickly orient new teachers to the team and easily share the fruits of experience (see Figure 6 for a template any team can adapt). Finally, the previous year's BASE planning in

math allows the special education teacher to use more collaboration time with other curricular areas.

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